ASSOCIATION OF LEVELS OF PULMONARY FUNCTION WITH SELECTED DEMOGRAPHIC VARIABLES OF WORKERS OF SHIVA SPINNING MILL TAPA, PUNJAB

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ABSTRACT
India is now a major power source and is turning into a developed country from a developing country. It is been estimated by the government of India that small-scale industries contribute 40% of the gross industrial value in Indian economy. A diagnosis of obliterative bronchiolitis induced by cotton dust exposure was established on the basis of the occupational history and the characteristic radiological signs.

In this study Quantitative, explorative study was used to assess the effect of cotton dust exposure on pulmonary function among workers of cotton industry at selected industries. The main study was conducted in Shiva Spinning mill Tapa, Punjab. It can be concluded from the present study that, the exposure to cotton dust has significant association with the pulmonary function with selected demographic variables of workers of shiva spinning mill tapa, Punjab.

Key words: *pulmonary function, selected demographic variables, industries.*

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INTRODUCTION

Health promotion and maintenance enables individual's families and communities to develop their full health potential. India is now a major power source and is turning into a developed country from a developing country. It is been estimated by the government of India that small-scale industries contribute 40% of the gross industrial value in Indian economy. The small sector has grown rapidly over the years that, growth rates during the various plan periods have been very impressive. The number of small-scale units has increased from an estimated 0.87 million units in the year 1980-81 to over 3million in the year 2000 This would lead to roping in of 4.2 million people to the spinning industry. This is in addition to nearly 6.5 million people that are already involved in the sector, which is the second largest employer after agriculture. Richa Mittal, Pawan Gupta and Sunil K Chhabra(2014) on occupational bronchitis induced by cotton dust exposure in a nonsmoker. The study reported a 63-year-old, nonsmoker male, who presented with complaints of cough and exertional dyspnoea for 10 years. He had worked in textile industry for 35 years and symptoms had persisted even after quitting. Examination revealed prolonged expiration with expiratory wheeze, and pulmonary function tests revealed severe airflow limitation with air trapping and impaired diffusion capacity. Arterial blood gas analysis showed type I respiratory failure. A high-resolution computed tomogram of the chest showed bilateral centrilobular nodules with tree-in-bud pattern and areas of air trapping. A diagnosis of obliterative bronchiolitis induced by cotton dust exposure was established on the basis of the occupational history and the characteristic radiological signs.

David C Christiani, Xiao-Rong Wang and Lei-Da Pan et al(2016) conducted a longitudinal study on changes in pulmonary function and respiratory symptoms in cotton textile workers. The study was a 15-yr follow-up study in cotton textile workers was performed in Shanghai, China from 1981 to 1996. Testing occurred four times during the 15-yr period. The achieved follow-up rates were 76–88% of the original 447 cotton textile workers, and 70–85% of the original 472 silk textile workers (as a control group). Identical questionnaires, equipment, and methods were used throughout the study. The prevalence of byssinosis increased over time in cotton workers, with 15.3% at the last survey versus 7.6% at the baseline, whereas no byssinosis was found in silk workers. Years worked in cotton mills, high level of exposure to endotoxin, and across-shift drops in FEV1 were found to be significant determinants for longitudinal change in FEV1, after controlling for appropriate confounders. Furthermore, there were statistically significant associations between excessive loss of FEV1 and byssinosis, chest tightness at work, and chronic bronchitis in cotton workers.

MATERIALS AND METHODS

Research approach

In this study Quantitative, explorative study was used to assess the effect of cotton dust exposure on pulmonary function among workers of cotton industry at selected industries.

Research Design

Research design is a structured framework for study implementation selection of design, data collection methods sampling frame all data analysis plan. A cross sectional observational study was adopted for the study.

Research Setting

The setting is where the population or the portion of that is being studied is located and where study is carried out.

The pilot study was conducted in Geeta Threads Its Barnala.

The main study was conducted in Shiva Spinning mill Tapa, Punjab.

Variable

Variable is defined as an attribute of person or objects that takes on different values. A variable is any phenomenon or characteristic or attribute that changes. Variables are measurable characteristics of a concept and consist of logical group of attributes. The practice of nursing research methods, appraisal and utilization.

Variables are identified in this study are age, height in cm, weight in kg, gender, religion, Marital status, education status ,designations, working experiences, type of family, domicile and habits.

Population

The term population refers to the aggregate or totality of all the objects subjects or members that confirm to a set of specification.

In the present study the population comprised workers at cotton mill.

Sample

In the present study the samples were workers at Shiva spinning mill, Tapa, Punjab.

Sampling technique

Non-probability convenient sampling technique was used for this study. The samples 65 were selected format Shiva spinning mill, Tapa, Punjab.

Sampling size

In this study the sample size were 300 workers.

Inferential statistics:

The chi square test was used to find the association between the pulmonary functions score, respiratory problems with selected demographic variables of workers.

Research Tool:

Research tools are the instruments used by the investigator and observer or measure the key variables in the research problem a scale is an ordered system of numbering or indexing that is used as a reference standard in measurement in which each number corresponds to some quantity. Tools were obtained by the investigator after the review of literature on relevant topics discussion with experts and guides.

Content Validity of the research tool:

Validity is the most critical criteria and includes the degree to which an instrument measures, what it is supposed to measure. To obtain content validity of the tool the prepared tool with objectives, operational definitions, hypothesis, and it submitted to 5 experts in the field. Experts were chosen on the basis of their clinical experience and teaching experience. Recommendations given included in the tool.

Data Collection Procedure:

The investigator obtained a written permission from the concerned authority of the Shiva spinning industries Tapa, Punjab. The baseline information was obtained by distribution of tool and baseline pulmonary function was obtained by spirometer.

Inferential statistics:

The chi square test was used to find the association between the pulmonary functions score, respiratory problems with selected demographic variables of workers.

RESULTS AND DISCUSSION

There was significant association between the levels of pulmonary function with **gender (χ^2 =6.37, df= 1 S*), designation (χ^2 =5.14, df=1, S*) and working area of an employee (χ^2 =10.88, df=3, S*) and** other demographic variables such as age (χ^2 =0.52, df=3, NS,) height in cms, (χ^2 = 2.44, df=3, NS,) weight of the employee (χ^2 = 0.88, df=3, NS,) religion (**χ^2** =0.86, df=2, NS), for marital status (**χ^2 =** 2.10, df=3, NS),education qualification (**χ^2 =** 0.73, df=3, NS) type of family, (**χ^2** =0.69, df=2, NS,) domicile (**χ^2** =0.15, df=1, NS), and habits, (**χ^2** =2.01, df=4, NS) were did not found significant.

Association of levels of pulmonary function with selected demographic variables of workers of cotton industry.

Table No .1 Association between the levels of pulmonary function with selected demographic variables. N=300

Sr. No.	**Demographic variable**	**F**	**< Median (174)**	**>Median (126)**	**χ^2 value**
1	**Age of the employee (In years)**				**χ^2=0.52, df=3,p>0.05, NS**
	21-30	58	32	26	
	31 – 40	117	70	47	
	41 – 50	64	38	26	
	51 – 60	61	34	27	
2	**Height in (cms)**				χ^2=2.44, df=3,p>0.05, NS
	Below 150 cm	32	21	11	
	150-160 cm	49	28	21	
	161-170 cm	178	98	80	
	171 and above.	41	27	14	
3	**Weight of the employee (In Kgs)**				χ^2=0.88, df=3,p>0.05, NS
	≤ 50 kg	37	21	16	
	51-60 kg	69	43	26	
	61-70 kg	89	52	37	
	> 70 kg	105	58	47	
4	**Gender**				**χ^2=6.37, df=1, p<0.05, S***
	Male	187	98	89	
	Female	113	76	37	
5	**Religion**				χ^2=0.86, df=2,p>0.05, NS
	Sikh	193	106	87	
	Hindu	84	48	36	
	Muslim	33	20	13	

6	**Marital status**				
	Married	179	98	81	χ^2=2.10, df=3, p>0.05, NS
	Un married	86	53	33	
	Divorced	12	8	4	
	Widow / Widower	23	15	8	
7	**Educational status**				χ^2=0.73, df=3, p>0.05, NS
	Primary education	63	38	25	
	Secondary education	91	53	38	
	Higher secondary education	86	47	39	
	Under Graduates	36	21	15	
	Post graduates	24	15	9	
8	**Designation**				**χ^2=5.14, df=1, p<0.05, S***
	Labour	269	157	112	
	Supervisor	31	17	14	
9	**Working experience**				**χ^2=10.88, df=3, p<0.05,S***
	0-9 years	42	26	16	
	10 -19 years	72	44	28	
	20 – 29 years	113	63	50	
	30-39 years	73	41	32	
10	**Type of family**				χ^2=0.69, df=2, p>0.05, NS
	Nuclear family	163	91	72	
	Joint family	61	37	24	
	Extended family	76	46	30	
11	**Domicile**				χ^2=0.15, df=1, p>0.05, NS
	Urban	123	73	50	
	Rural	177	101	76	
12	**Habits(bad)**				
	Smoking.	63	37	26	χ^2=2.01, df=4, p>0.05, NS
	Tobacco chewing	56	31	25	
	Alcohol	89	52	37	
	Pan chewing	71	39	32	
	No habits	21	15	6	

CONCLUSIONS

There was significant association between the levels of pulmonary function with gender (χ 2 =6.37, df= 1 S*), designation (χ 2 =5.14, df=1, S*) and working area of an employee (χ 2 =10.88, df=3, S*) and other demographic variables such as age (χ 2 = 0.52, df=3, NS,) height in cms, (χ 2 = 2.44, df=3, NS,) weight of the employee (χ 2 = 0.88, df=3, NS,) religion (χ 2 =0.86, df=2, NS), for marital status (χ 2 = 2.10, df=3, NS), education qualification (χ 2 = 0.73, df=3, NS) type of family, (χ 2 =0.69, df=2, NS,) domicile (χ 2 =0.15, df=1, NS), and habits, (χ 2 =2.01, df=4, NS) were did not found significant.

It can be concluded from the present study that, the exposure to cotton dust has significant association with the pulmonary function with selected demographic variables of workers of shiva spinning mill tapa, Punjab. It needs to manage well otherwise it may result in onset of various respiratory disorders.

REFERENCES

1. Bharat M Dangi, Anjali R Bhise,(2017). Cotton dust exposure: Analysis of pulmonary function and respiratory symptoms.34(2), 144-149.
2. David C Christiani, Xiao-Rong Wang and Lei-Da Pan et al (2016) conducted a longitudinal study on changes in pulmonary function and respiratory symptoms in cotton textile workers.Am J Respir Crit Care Med. 163(4):847-53
3. Richa Mittal, Pawan Gupta and Sunil K Chhabra (2016). Occupational bronchitis induced by cotton dust exposure in a nonsmoker. Indian J Occup Environ Med. 20(2): 118–120.